2.19 Signing

2.19.1 *General*

The Design-Builder shall conduct all Work necessary to meet the requirements for permanent signing for the Project. Refer to Section TR 2.22, *Maintenance of Traffic*, for additional signing requirements.

The Design-Builder shall replace all signs on SR3, SR104, SR303, SR307, and SR308 within 1000 feet of each Culvert Site that were installed more than 10 years prior to the applicable Culvert Bundle Amendment Date. This shall apply to all signs on the mainline except Motorist Information Signs (MIS). Signs fabricated and installed 10 years or less from the applicable Culvert Bundle Amendment Date may remain in place or be relocated as necessary to accommodate new geometry, provide more accurate sign placement, correct spacing deficiencies, or replace wood posts. The installation date shall be considered the date shown on the fabrication sticker on the back of the sign. If this sticker is missing or unreadable, the sign shall be deemed to be more than 10 years old and shall be replaced.

Signs on SR3, SR104, SR303, SR307, and SR308within Work limits of each Culvert Site that are damaged or that do not meet the Mandatory Standards shall be replaced or upgraded in accordance with the WSDOT *Sign Fabrication Manual* or the *FHWA Standard Highway Signs*. Within permanent Work limits of each Culvert Site on SR3, SR104, SR303, SR307, and SR308where changes are made to the roadway geometry or lane configuration, signs that are damaged or that do not meet the Mandatory Standards shall be replaced or upgraded in accordance with the WSDOT *Sign Fabrication Manual* or the *FHWA Standard Highway Signs*.

The Design-Builder shall be responsible for providing all new signing required for changes made to the roadway geometry or lane configuration.

2.19.2 *Mandatory Standards*

The following is a list of Mandatory Standards that shall be followed for all design and construction related to this Section as referenced in TR Section 2.2, *Mandatory Standards*.

1. Special Provisions (Appendix 4)
2. Standard Specifications M 41-10 (Appendix 4)
3. WSDOT *Standard Plans* M 21-01 (Appendix 4)
4. WSDOT *Traffic Manual* M 51-02 (Appendix 4)
5. WSDOT *Design Manual* M 22-01 (Appendix 4)
6. WSDOT *Sign Fabrication Manual* M 55-05 (Appendix 4)

7. *Washington State Modifications to the Manual on Uniform Traffic Control Devices* (WAC 468-95) (Appendix 4)
8. *FHWA Manual on Uniform Traffic Control Devices for Streets and Highways*, 2009 Edition with Revisions 1 & 2 dated May, 2012 (Appendix 4)
9. *FHWA Standard Highway Signs*, 2012 Supplement to the 2004 edition (Appendix 4)
10. WSDOT *Plans Preparation Manual* M 22-31 (Appendix 4)
11. WSDOT *Electronic Engineering Data Standards* M 3028 (Appendix 4)
12. WSDOT *Materials Manual* M 46-01 (Appendix 4)
13. *AASHTO A Policy on Geometric Design of Highways and Streets*
14. *AASHTO LRFD Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals*
15. *AASHTO Roadside Design Guide*
16. *Transportation Research Board Highway Capacity Manual*
17. *ITE Traffic Control Devices Handbook*
18. *FHWA Traffic Control Systems Handbook*
19. *ITE Traffic Engineering Handbook*

2.19.3 *Design and Construction Requirements*

2.19.3.1 *Software*

The Design-Builder shall use software for producing engineering drawings of guide signs that can either create or seamlessly convert files to MicroStation DGN file format.

The Design-Builder may use WSDOT's SignSpecs 2.0 Excel spreadsheet program to produce the sign specification sheets. The spreadsheet program can be accessed from the WSDOT sign specification website, https://www.wsdot.wa.gov/Design/ProjectDev/EngineeringApplications/SignSpecification.htm

If the WSDOT SignSpecs 2.0 Excel spreadsheet is used, all sign notes shall be compiled on the INS # tab sheets. These sheets shall be edited to read “SIGN SPECIFICATIONS”. This is done by removing the word “installation” from the top line of the sheet (must be done for each sheet). The password to make modifications is “dotsgsp”.

2.19.3.2 *Signing Design Requirements*

2.19.3.2.1 *Existing Sign Inventory*

The Design-Builder shall complete an Existing Sign Inventory using the WSDOT *Sign Inventory Sheet* (Appendix 4). This inventory shall include all signs within the Project limits and all signs outside the Project limits that will be affected by the Project. All dimensions on the WSDOT *Sign Inventory Sheet* (Appendix 4) shall be field measured. The Existing Sign Inventory shall include the following:

- Location of sign by station or roadway feature where stationing does not exist
- Horizontal distance (W) as shown in Standard Plan G-20.10
- Vertical clearance (V) as shown in Standard Plan G-20.10
- Size of sign panel
- Sign fabrication date (sticker on back of sign)
- General condition of sign, noting any apparent damage
- Post type and material, size, length, and condition (if wood post, only type is required)
- Digital photograph of the front and back of all signs included in the inventory, including station and direction of travel. The photographs shall be submitted on a USB flash drive, and the pictures shall be in JPEG format
- Strip map and legend showing all existing traffic signs, including cross and side road signs, with corresponding identifying labels

2.19.3.2.2 *Sign Spacing*

Minimum mainline sign spacing between all primary and supplemental guide signs shall be in accordance with the WSDOT *Traffic Manual*. The minimum mainline sign spacing requirement shall also apply to general motorist service; and natural, historic, and cultural signs. Minimum sign spacing between all other signs except Milepost (MP) and object marker signs shall be 500 feet. Lateral clearance requirements shall be in accordance with Standard Plan G-20.10 and the *FHWA Manual on Uniform Traffic Control Devices for Streets and Highways*. Vertical clearance to ground-mounted signs shall be in accordance with Standard Plan G-20.10 and the *FHWA Manual on Uniform Traffic Control Devices for Streets and Highways*. Vertical clearance to overhead signs shall be 20 feet from the bottom of the sign to the finished grade or roadway-wearing surface.

The Design-Builder shall coordinate with Olympic Region Traffic Office regarding proposed signing modifications within their Right of Way (ROW).

2.19.3.2.3 *Sign Posts*

All wood signposts on US 101 and SR 109 within permanent Work limits of each Culvert Site shall be replaced with steel signposts regardless of the age of the

sign. All other signs within the ROW that are replaced, relocated, or modified due to the Project shall have steel signposts.

Steel signposts shall be:

- 2.5-inch Perforated Square Steel Tube (PSST) with Type ST-4 or 2.5-inch with a full-length 2.25-inch PSST insert with Slip Base (SB) supports (Type ST-1 supports may be used with MP and object markers only when behind barrier or guardrail).
  - Where SB support is required behind the guardrail, a Type ST-4 support may be used
- 3-inch Solid Square Steel Tube (SSST) with Type SB supports
- ASTM A992 "W" series posts

Signposts for all signs outside the ROW that are replaced, relocated, or modified shall be in accordance with the affected Local Agency's specifications

Sign width on single-post installations shall not exceed 5 feet.

2.19.3.2.4 *Overhead Sign Illumination*

This Section is intentionally omitted.

2.19.3.2.5 *Overhead Signs on Structures*

This Section is intentionally omitted.

2.19.3.2.6 *Signs on Light Standards*

The maximum allowed square footage for signs on light standards is 10 square feet. The maximum Z value shall be 9.5 feet.

2.19.3.2.7 *Signs on Signal Poles and Mast Arms*

This Section is intentionally omitted.

2.19.3.2.8 *Ramp Meter Signing*

This Section is intentionally omitted.

2.19.3.2.9 *Speed Limit and Speed Reduction Signs*

This Section is intentionally omitted.

2.19.3.2.10 *Motorist Information Signs*

If the removal of any MIS is required for construction, the Design-Builder shall relocate and reinstall the existing MIS at a location acceptable to WSDOT in accordance with this Section. Existing MIS shall be relocated, replaced, or temporarily mounted within 24 hours of removal.

WSDOT will supply new sign back panels or business logo signs at its discretion to replace existing MIS being relocated. MIS damaged by the Design-Builder shall be replaced at the Design-Builder's expense, payable solely through the Culvert Bundle Design-Builder Contingency, provided that such costs were not caused by the negligence or willful misconduct of any Design-Builder Person. The Design-Builder shall furnish new sign foundations and steel posts and install the new sign panels or relocated existing sign panels.

2.19.3.2.11 *Toll Rate Signs*

This Section is intentionally omitted.

2.19.3.2.12 *Left Lane Restriction Signs*

To be determined during Phase 1.

2.19.3.2.13 *Left Lane Restriction Ends Signs*

To be determined during Phase 1

2.19.3.2.14 *High Occupancy Toll Lane Signs*

This Section is intentionally omitted.

2.19.3.2.15 *EXIT ONLY Panels*

This Section is intentionally omitted.

2.19.3.2.16 *Overhead Sign Placement*

This Section is intentionally omitted.

2.19.3.2.17 *Non-Standard Breakaway Features*

The Design-Builder shall be responsible for upgrading all existing non-standard breakaway features for signposts impacted by this Project. See *Type 1 Breakaway Feature Description* (Appendix 4).

2.19.3.2.18 *Conceptual Guide Sign Plan*

This Section is intentionally omitted.

2.19.3.2.19 *Bicycle Restriction Signs*

This Section is intentionally omitted.

2.19.3.3 *Plan Requirements*

The Design-Builder shall prepare and submit a Permanent Signing Plan for the Project. This plan shall include all necessary guides, warnings, regulations, markers, and information signs. The Permanent Signing Plan shall also provide for modifications and updates to signs outside of the Project limits that are

rendered inaccurate, ineffective, confusing, or unnecessary by WSDOT as a result of modifications by the Project. The modifications shall include the addition, removal, or replacement of signs and appurtenances. The Permanent Signing Plan shall include and provide for all Project signing within and outside of the Project limits.

The Permanent Signing Plan shall include, but is not limited to, the following:

- Sign locations, sign notes, and identifications. These shall include existing signs to remain, existing signs to be relocated, and new signs. Sign locations shall be shown using the correct sign symbol as shown in the WSDOT *Electronic Engineering Data Standards*. Where signs are being placed on light standards, signal poles, or mast arms; those symbols shall be shown as well as any corresponding sign symbols such as an overhead sign on a mast arm. Sign notes shall be shown using either Sign Note, Sign Relocation or Sign Removal note flags as shown in the WSDOT *Electronic Engineering Data Standards*. New signs and signs to be relocated shall be identified with a small-scale detail. Existing signs to remain shall be identified in note form only.
- Sign details shall be drawn to scale and shall include sign size, sign legend, text and symbol height, letter stroke width, background legend and border colors, and vertical and horizontal spacing. All mainline primary guide signs shall be of the E Series classification and Size Code E in accordance with the WSDOT *Sign Fabrication Manual*. All mainline supplemental guide signs shall be of the E Series classification and Size Code C in accordance with the WSDOT *Sign Fabrication Manual*.
- Cameras, and light and signal standards
- Types of proposed sign structures
- Permanent signing proposed on bridge structures

Sign specifications sheets shall be compiled on a single style sheet titled “SIGN SPECIFICATIONS” and shall have all removal, installation, and relocation notes in numerical order as shown in *Olympic Region Signing Plan Sheet Examples* (Appendix 4). Separate sheets for installation, removal, and relocation notes will not be allowed.

2.19.3.4 *Material Requirements*

2.19.3.4.1 *Sign Sheeting Material*

All permanent signs shall be fabricated with background, legend, and border sheeting in accordance with Chapter 2 of the WSDOT *Traffic Manual* and shall be constructed in accordance with Section 9-28 of the Standard Specifications.

2.19.3.4.2 *Sign Supports*

At Physical Completion, all ground-mounted permanent signs within the Project limits and within the ROW shall have steel signposts. All other posts within the Project limits shall conform to the applicable Local Agency standards.

All new cantilever and sign bridge structures shall be monotube. Relocation of existing sign bridge and cantilever structures will not be allowed.

2.19.3.5 *Future Active Traffic Management Signs*

This Section is intentionally omitted.

2.19.3.6 *Permanent Signing Construction Requirements*

2.19.3.6.1 *General*

All existing signs, new permanent signs installed as part of this Contract, and construction signs that are inappropriate for the traffic configuration at any given time shall be removed or completely covered in accordance with Section 8-21 of the Standard Specifications during periods when they are not needed. TRS shall have the static portion of the sign covered with the electronic display visible for testing. The covering shall conform to Section 9-28.8 of the Standard Specifications.

Existing sign panels and sign structures shall remain in place or shall be temporarily mounted until new, or replacement signs are installed. New or replacement signs shall not be installed in a location that obscures the visibility of an existing sign.

2.19.3.6.2 *Material Requirements*

The Design-Builder shall supply new materials for all signs, signposts, structures, mounting hardware, and foundations.

2.19.3.6.3 *Salvage*

The Design-Builder shall notify the affected Local Agency a minimum of 7 Calendar Days in advance of removal of any Local Agency signs or sign structures. If the Local Agency requests that the items be salvaged, the Design-Builder shall make arrangements to deliver the items to the location specified by the Local Agency.

MIS and business logo signs shall be salvaged as designated by the WSDOT Engineer and Region Traffic Office. All other WSDOT signs removed by the Design-Builder shall become the property of the Design-Builder.

2.19.4 *Submittals*

All submittals shall be in accordance with the Quality Management Plan.

2.19.4.1 *Preliminary Design Submittal*

The Design-Builder shall submit the Permanent Signing Plan and the Existing Sign Inventory with the Preliminary Design Submittal. Plan sheets shall be prepared in accordance with this Section, TR Section 2.28, *Quality Management Plan*, the WSDOT *Electronic Engineering Data Standards*, and the WSDOT *Plans Preparation Manual*.

The Preliminary Design Submittal shall include, but is not limited to:

- Sign specification sheets containing sign number, sign code (WSDOT *Sign Fabrication Manual*), sign description, station location, sign size, letter size or sign code (this can include "see detail") and offset for each sign.
- Signing plan sheets showing the location of all new signs; and existing signs to remain, to be relocated, and to be removed.
  - Include the sign number referenced from the sign specification sheet.
  - Include a small-scale layout of all signs including guide, regulatory, warning, and object markers for new signs, signs to remain, and signs to be relocated. Signs to be removed shall be depicted in note form only.
  - Include existing and proposed utilities within a 20-foot radius of new overhead sign structure foundations.
- Show final pavement markings.
- Sign Detail Plans and sign numbers corresponding to the sign specification sheets.
- Sign drawings (other than Standard Plans) showing details of sign mounting, foundations, base connections, and frames.
- For each sign bridge and cantilever sign structure, the Design-Builder shall provide drawings of cross-sections showing footing details, locations of Utilities within 20 feet of foundations, offsets, and sign placement including relations to travel lanes, mounting heights, and vertical clearance. Sign details of signs being installed on these structures shall be provided to the WSDOT Engineer for Review and Comment prior to these cross-section drawings submittals.

2.19.4.2 *Permanent Signing Plans (Final Design Submittal)*

The Design-Builder shall prepare plan sheets in accordance with this Section; TR Section 2.28, *Quality Management Plan*; the WSDOT *Electronic Engineering Data Standards*; and the WSDOT *Plans Preparation Manual*.

The Permanent Signing Plans shall include, at a minimum, all items from the Preliminary Design Submittal and the following items:

- Sign specification sheets containing all necessary information to fabricate, install, remove, and relocate all signs for the Project. This shall include all

information required in the Preliminary Design Submittal, as well as post type, size, and lengths, and horizontal (W) and vertical (V) offsets.

The Permanent Signing Plans shall be submitted to the WSDOT Engineer for Review and Comment as part of the Final Design Submittal.

2.19.4.3 *As Built Sign Inventory*

The Design-Builder shall deliver an as built sign inventory within 30 Calendar Days of completion of Work with regard to each Culvert Bundle Punch List. These records shall include the following:

- Sign fabrication number
- State Route
- Mainline MP
- Location (mainline, LX)
- Special MP
- Direction of travel
- Direction sign is facing
- Side of road
- Sign message
- Sign height
- Sign width
- Background and letter colors
- Letter type (stroke width - B, C, D, E, Em)
- Letter height
- Installation date
- Support type
- Support size
- Number of supports
- Sheeting type
- Sign sort number (top to bottom or left to right)
- Action taken (install, relocate, remove)
- Reason for action
- Picture of front and back of sign, including posts and foundations in .JPEG format

The Design-Builder shall be responsible for converting station locations to MP. The Design-Builder shall also provide the WSDOT Engineer with an USB flash drive containing the above information submitted in a Microsoft Excel spreadsheet including all signs within the Project limits.

2.19.4.4 *Miscellaneous Submittals*

At the request of the WSDOT Engineer, the Design-Builder shall deliver to the WSDOT Engineer Work-related submittals that do not fit in the previous categories but are prepared in accordance with this Section.

End of Section